Snowflake Shape and Size Identification Procedures

Purpose: To identify the shapes and sizes of snowflakes as they fall and to monitor any changes in shape during the progress of the storm. These procedures should be completed at least every two hours during a snow event to provide a complete "picture" of the entire snow event. Compared with other weather data such as air temperature and moisture content, these data should help you to understand what the shapes of snowflakes can tell you about snowstorms.

Estimated Time: 15 Minutes for each observation

Materials:
Proper outdoor clothing
Thermometer w/ string (readable to a tenth of a degree Celsius)
Black construction paper (8.5x11)
Magnifying glass or hand lens
Metric Ruler
Pencil
Calculator (Optional)
Weather Watch Field Data Sheet
Snowflake Shape and Size Field Data Sheet

Preparing the "Catch Surface" (Black construction paper with 3cm x 3cm grid)

1. Using a metric ruler and a pencil, draw vertical lines the length of the black paper at three-centimeter intervals. (See Figure 1)
2. Using a metric ruler and a pencil, draw horizontal lines the length of the black paper at three-centimeter intervals to complete the 3cm x 3cm grid. (See Figure 2)
3. Place the black paper containing the 3cm x 3cm grid, catch surface, in a location that will allow it to cool below zero degrees Celsius for several hours to reach equilibrium. (Sheltered outside location, Freezer, etc.)

Figure 1

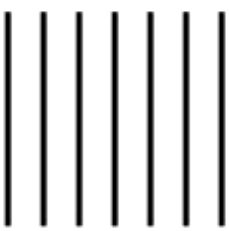
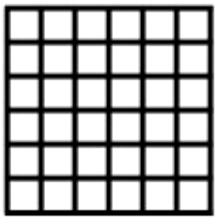


Figure 2



Snowflake Collection (Best Completed with a Partner)

Before going outside

Complete as much information as you can from inside on the Weather Watch Field Data Sheet.

Outside

1. Record the temperature, humidity, barometric pressure, wind speed, wind direction, cloud cover and cloud type for your locality. Record each of these on the space provided on the Weather Watch Field Data sheet. If you cannot measure these directly, you may use a weather site on the Internet. (for example use Unisys Internet Weather Data http://weather.unisys.com/index.html and enter your zip code in the search box on the left of the Unisys Home Page and click GO. Bookmark the page for your city. Be careful. Look at the actual location of the Unisys Weather Station – it may be some distance from your location and it may be across large bodies of water or hills.)
2. Go to the site suitable for snowflake collection. It should be out of the wind and with nothing overhead to block the fall of snow. Bring the thermometer, Snowflake Identification Field Data sheet, a pencil, a magnifying glass and Catch Surface with you.
3. Place the Catch Surface parallel to the ground, allowing snowflakes to fall onto the Catch Surface. Expose the Catch Surface for several minutes depending on how fast the snow is falling. This may take some practice. If there are too few snowflakes, you won't be able to find many to identify. If there are too many snowflakes, they will begin to cover each other and make identification difficult.
4. Move the Catch Surface into a sheltered outside location or cluster in a group to prevent further snowflake accumulation or snowflake loss.
5. Choose a box from the grid for close study.
6. Using the magnifying glass select and study one of the snowflakes in the box and compare it to the sketches on the data sheet for identification.
7. Use your metric ruler to measure the size of the snowflake to the nearest 0.5mm
8. On the data sheet place a tally mark in the box next to the picture and size of the snowflake.
9. Repeat steps 6, 7 and 8 until all the snowflakes in the box have been identified and tallied on the data sheet.
10. Select another box from the grid for close study.
11. Using the procedures describe in steps 6, 7, and 8, identify and tally all snowflakes in this box.
12. Repeat steps 10 and 11 until you have closely studied 10 boxes total.

Calculation of Each Snowflake Type Percentage

1. Divide the number of each type of snowflake by the total number of snowflakes you identified to get a decimal fraction.
2. Convert the decimal fraction to a percent by multiplying your answer from Calculation Step 1 by 100. Round your answer to the nearest whole number for each type of snowflake observed. Remember to label your answer with the percentage symbol.